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Three Faces of Eden: The Persistence of Competing Theories and Multiple Diagnoses in Organizational Intervention Research

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Recently, three noted scholars in the field of organizational development and action research, Edgar Schein, Peter Senge, and Chris Argyris, decided to collaborate on research at the newly formed Center for Organizational Learning at MIT. This article presents an analysis of factors impeding this collaboration, drawing from the literature and from the author's experiences as a researcher at the center. The article compares the three strategies for intervention research, and explores the theories of organizational effectiveness implied by each. Core challenges for each approach are identified, followed by theoretical and temperamental factors that may contribute to the persistence of separate approaches. Finally, options for collaborative research are reviewed, along with a recommendation for an integrative approach.

KEY WORDS: organizational change; organizational learning; intervention research; action research; culture; systems thinking.

INTRODUCTION

In the past few years, the idea of organizational learning has captured the imagination of both managers and scholars (Argyris, 1982; Hayes, Wheelwright, & Clark, 1988; Senge, 1990a; Schein, 1992; Jones & Hendy, 1992). This focus on learning gives rise to a cognitive approach, in which individuals' beliefs and insights are viewed as critical influences on organizational effectiveness. Organizational learning theorists propose that it is not enough for leaders to design appropriate organization structures and continue to make well-reasoned decisions; instead, organizations must be characterized at all levels by attentiveness to changing conditions. "Learn-

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ing organizations" are frequently portrayed as extraordinary workplaces that will function at once as market powerhouses and as vital communities of learners (e.g., Senge, 1990a; Redding & Catalanello, 1994). Such optimism is not new; ambitious organization change efforts can be traced as far back as the work of Likert (1961), McGregor (1960), Bennis (1966), Schein (1965), Argyris (1962), and Forrester (1961) in the early sixties. In 30 years of competing frameworks and analytical tools, however, no single approach to organizational intervention has emerged as the most efficacious. On the contrary, independent schools of thought have tended to attract new scholars and practitioners and to develop their respective approaches, with little cross-fertilization among them.

Opposing this historical trend, three academic traditions—corporate culture, system dynamics, and action science—recently joined forces in a new Center for Organizational Learning at MIT, led by Peter Senge, to design and implement intervention research in participating companies. Despite the considerable intellectual and institutional weight brought to the project by the stature of the principal scholars, Edgar Schein, Peter Senge, and Chris Argyris, and by the stature of MIT itself, this collaboration still must confront differences in underlying theory, goals, language, and research methods in forging an integrative approach to intervention. Recently discussing these differences with a colleague the author was reminded of a documentary film³ in which Carl Rogers, Albert Ellis, and Fritz Perls each diagnosed the same patient, and their different theories and approaches led to three very different analyses—three diagnostic faces. The patient ultimately selected one of her doctors, Fritz Perls, as having been the most helpful. Is this selection among alternatives to be the fate of companies who have volunteered as subjects for MIT's research center? Or, is there a synthesis of theories that could be more helpful than any of the three applied separately? This article addresses these two questions. And, somewhat paradoxically, it will propose an affirmative answer to both.

Just as psychotherapists may offer different diagnoses for the same patient, organizational scholars do not agree about what accounts for ineffectiveness in an organization. Different theories tend to be introduced along with descriptions of how each supplants previous work. Unlike theory building in the natural sciences, organizational theory has proceeded without a strong sense of collective endeavor (Argyris, 1980; Perrow, 1986). Each school of thought adheres to its own method, unit of analysis, and underlying assumptions. This lack of consensus about research methods for

understanding organizational behavior carries over to designing research to study intervention and change. Each theory of intervention is based on an explicit or implicit theory of organizational (in)effectiveness. Decisions about how to intervene are shaped by ideas about what factors promote and inhibit an organization's ability to function. Each approach necessarily ignores classes of data that are not relevant to its theory. For this reason it is not common practice for individual researchers and practitioners to utilize a variety of intervention methods according to the demands of the situation. Instead, most practitioners carry a hammer and assume the presence of nails. This is not mere blindness or habit; a given approach is assumed to be widely applicable because it is derived from a theory of organizational ineffectiveness. For example, system dynamicists view ineffectiveness as a function of poorly understood cause-effect relationships in organizations, and so they focus on the "mental models" that lie behind policy decisions (Senge, 1990b).

THREE APPROACHES TO INTERVENTION AND ORGANIZATIONAL LEARNING

The MIT learning center represents an experiment in collaborative research involving three well known scholars—making it an experiment of particular interest to those who study organizational learning. The ambition of this article is to make a theoretical contribution that fosters discussion and generates ideas for future intervention research. The analysis draws from the author's experience as a researcher at the center and from the organizational literature. In the remainder of this article, a company studied by the author while representing the center is briefly described, to set a context for describing the different approaches to intervention suggested by Schein, Senge, and Argyris. The article then examines the underlying theories of effectiveness each scholar holds, before reviewing all three strategies for intervention in more detail, and identifying core challenges or gaps in each. The subsequent analysis of the compatibility of the theories starts by asking to what extent their differences are byproducts of different research traditions in the social sciences. Finally, theoretical and temperamental factors that may be responsible for the persistence of separate disciplines are proposed, followed by a brief discussion of options for collaboration.

A Candidate for Organizational Learning. Office Co. is a leading manufacturer of capital goods for offices. Its executives are proud of a history of technological innovation and participative management. Most senior managers have been with the company for many years and are accustomed to market and financial success; however, their industry has gone through

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significant changes in the past decade that threaten Office Co.'s market leadership. Corporate customers are increasingly price sensitive and less willing to pay a premium for the top quality image of Office Co.'s products; moreover, customers are beginning to expect a kind of consultative expertise that the company currently is unable to provide. In response to falling profitability and flat revenues, the CEO implemented a new matrix-type organizational structure, to promote more coordination among functions. He proposes a shift from a product focus to a solution focus, requiring an increase in the knowledge and service components of their business. Despite having identified this as a goal, Office Co. faces barriers to change.

Sharing the same goal of helping Office Co. become a learning organization, Schein, Senge, and Argyris recommended three different approaches to intervention research to the author. Their recommendations are abbreviated here for clarity of comparison. Each approach will be described in more detail below, drawing also from the literature.

1. *Schein*. Observe meetings and managers in action; do not intervene unless asked by them to comment, and even then say as little as you can until you understand the organization better. Do not audiotape the sessions as this may inhibit discussion, and more importantly it is counterproductive to generate transcripts for which you do not have a specific use. Later, you might facilitate a session to uncover cultural assumptions, during which you are likely to find tacit, contradictory beliefs that prevent the organization from learning and implementing desired changes. The research product is a set of internally-contradictory cultural assumptions that provide the group with something to work together to change.

2. *Senge*. Create a team of learning center researchers and Office Co. managers committed to changing the organization. The team can collect data reflecting system irrationalities. A working hypothesis is that Office Co. has systematically underinvested in service capacity, believing it too expensive to provide the services customers want, and remaining unaware of the cost of lost opportunities. Next, the team will design "learning laboratories" to enable others to learn about these system dynamics, as a first step in implementing change. The research product is a model of how Office Co.'s own decisions negatively affect its market position.

3. *Argyris*. Actively participate in sessions to identify defensive communication among managers. Be direct about this intention and base all discussion on directly observable data in the form of immediate conversations, tape-recordings, or transcripts. Help the managers to see that they hold "personal theories of effective action" which unintentionally lead to others becoming defensive. With coaching, they can develop the skills to reflect out loud and learn from each other. The research product is a map

diagramming the interaction of governing values, individuals' strategies, a organization consequences.

At first glance, a researcher may expect to benefit greatly from the wealth of advice, coming from three respected organizational scholars, is not unsettling that these different theories of intervention will call attention to different facets of Office Co.—culture, system interrelationships and managers' interpersonal causal reasoning. Upon additional reflection however, troubling contradictions emerge if all three are embraced wholeheartedly. They seek different kinds of data because they believe different phenomena in organizations to matter most. Each intervention theory necessarily views the phenomena and claims of the other two as secondary issues, as shall be explored below. Thus, the new researcher must wonder how sensible it is to borrow all three theories, without fully subscribing to the implicit underlying claim of uniquely focusing on the heart of the matter. Moreover, in the context of the learning center's collaborative spirit is it noteworthy that their recommendations lack explicit suggestions for integration with the others.

The Underlying Theories. Schein (1988, 1990) sees organizational ineffectiveness as a function of inconsistent cultural assumptions and value as well as of poor group process. Stated positively, effective organizations utilize process skills to run meetings, solve problems, and make decisions. These organizations also hold certain values that are deeply imbedded in the culture and enable members to contribute and to grow as individuals. In contrast, Senge (1990b) and his mentor Forrester (1961) see organizational ineffectiveness as a function of poorly designed system the inevitable result of erroneous perceptions of causality. A learning organization is free of design irrationalities (of which the vicious cycle a simple example) by virtue of its managers having learned to transcend the limitations of cognitive biases through systems thinking. Finally, Argyris (1962, 1982) views ineffectiveness as a function of a lack of interpersonal competence, stemming from individuals' unawareness of their own interpersonal strategies. These strategies significantly inhibit individuals' abilities to learn, and leave organizations paralyzed by "defensive routines" (Argyris, 1993).

The next three sections examine the theories of effectiveness underlying each approach to consider if there are substantive conflicts which impede integration. Each researcher proposes to identify barriers to learning in a specific intervention process, through which implicit as well as explicit theories of effectiveness are conveyed. Schein is deeply committed to careful clinical work. He proposes to dig to uncover subtle cultural beliefs, but prefers not to impose any hypotheses on his subjects until he has private confidence in their utility. Senge's approach is part systems engi

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neering, part personal growth and team building. Argyris (1980), who explicitly rebels against the "inner contradictions of normal science," is ironically the most logical and systematic of the three. Each proposition is illustrated and tested with participants in the intervention. And, each step of his argument follows logically from the one before—creating a powerfully internally-consistent system, but one that most researchers have felt free to ignore.

PROCESS CONSULTATION AND CULTURE: SKILLS AND VALUES AS BARRIERS TO LEARNING

Schein describes process consultation as a way for consultant/researcher and managers to diagnose organizational problems and design solutions together. In his view, it is essential that the researcher *not* share his insights prematurely, for two reasons: he does not want to be *wrong* and lose credibility, and he does not want to be *right* and invoke defensiveness before sufficient trust is established (Schein, 1988). Effective organizations utilize process skills for ongoing diagnosis and intervention that can be relatively easily learned by managers; "the essential function of process consultation is to pass on the skills of how to diagnose and fix organizational problems so that the client is more able to continue on his own to improve the organization" (Schein, 1988, p. 11). Unlike Argyris (1982), who documents an almost universal lack of double-loop learning in organizations, Schein sees most organizations as essentially healthy and willing patients. They lack certain skills and may be handicapped by dysfunctional values, but these gaps are remedied relatively easily.

Schein's recent work focuses on organizational culture, as the processes that process consultation works to change are shaped by cultural assumptions. Shared tacit assumptions are the basic units of culture and they powerfully influence behavior in organizations (Schein, 1990). Culture is "a learned product of group experience" (1990, p. 15) and its strength is a function of the convictions of an organization's founders, the stability of the group or organization, and the intensity and nature of past learning experiences. Beliefs held by founders and leaders are extremely powerful in this model, carrying on for years after the founders themselves have ceased to run the company (Schein, 1992).

Schein describes a participative process for deciphering an organization's culture, involving a half-day session in which a researcher starts by eliciting data about *cultural artifacts* such as dress codes, ways of talking to the boss, and other visible evidence of a culture. The most recent hire is asked to start off the list, to offer the unjudged observations of a newcomer. The second level of data encompasses *espoused values*—that is, readily of-

fered reasons for the visible artifacts. This requires people to think slightly more deeply to generate explanations such as "We value problem solving more than formal authority" (Schein, 1993, p. 150), which once stated are readily recognized by everyone. The third and most subtle level captures *shared underlying assumptions*, which require some probing to be uncovered, such as through discussing inconsistencies between artifacts and espoused values (Fig. 1). Finally, the researcher pulls together the findings from the group and together they examine assumptions which may aid or hinder progress on stated change goals. This process is part of a shift, advocated by Schein (1991), from ethnographer to clinician as the relationship with a client is strengthened. Like Argyris, Schein maintains that

a traditional research paradigm . . . has not worked very well . . . [it] has produced very reliable results about very unimportant things. . . . In that process, we have lost touch with some of the important phenomena that go on in organizations, or have ignored them simply because they were too difficult to study by the traditional methods available. (Schein, 1991, p. 2)

The methodological concern he articulates here is that superficial responses will be given by managers to a *researcher* but not to a *consultant* believed to be working to help the company. His solution is to introduce "clinical research," which elicits the kind of "data that are available when we are actively engaged in helping organizations" (Schein, 1991, p. 3). Unlike Argyris, Schein believes a clinical relationship must be established slowly, after a period of relative distance. Other organization development researchers have applauded Schein's use of the clinical approach to expose organization specific schema or cognitive filters (e.g., Poole, Gioia, & Gray, 1989) as well as his careful attention to multiple levels of meaning in culture (Bice, 1988).

The implication of Schein's approach is that once counterproductive beliefs are articulated, it is then possible to change them. However, the risk inherent in this approach is that diagnosis instead will lead only to better understanding of the organization's dysfunction but not to an ability to change it. Process consultants working in organizations over many years have led to a notable lack of improvement from their efforts (Kaplan, 1979). The effectiveness of Schein's strategy for organizational change may also be limited by ignoring power, according to Perrow (1986) those in power in an organization use unobtrusive controls to influence the tacit assumptions of organization members. In this view, benefits from diagnosing and changing an organization's culture will be overwhelmed by the effects of self-serving exercises of power (Pfeffer, 1981; Perrow, 1986). In summary, the blend of ethnographic and clinical processes described above may be better able to describe the status quo than to change it.

VISIBLE ARTIFACTS

(*For K. shows order, ways of talking to the boss.*)



SHARED ESPOUSED VALUES

(*For K. see value participation in decision making, by all employees.*)



SHARED BASIC ASSUMPTIONS

(*For K. leaders have the answers. Leaders save the day.*)

Fig. 1. Schein's model for diagnosing corporate culture.

MODELING AND EXPERIMENTATION: COGNITIVE BARRIERS TO ORGANIZATIONAL LEARNING

System dynamics is at first glance exclusively technical—documenting dysfunctional properties of organizations that result from decision-makers' misinterpretations of cause and effect in complex dynamic systems. However, this cognitive element has led Senge to go beyond mere application of technical advice, and to call for active participation and learning by organizational members. A brief review of system dynamics serves as background for understanding Senge's current intervention research.

Over 30 years ago, MIT electrical engineer Jay Forrester (1961) observed that the theory of information feedback systems could serve as a basis for understanding the interplay between parts of a business system. Out of this initial insight grew a new academic discipline that continues to attract new scholars and practitioners. Recently Forrester explains,

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If one understands the behavior of a structure in one setting, one understands it in all settings. In the inventory-production system, inventory and production are structurally in the same relationship to each other as are position and velocity in a swinging clock pendulum. Both structures tend to produce sustained oscillation. (quoted in Keough & Doman, 1992, p. 11)

System dynamics is a body of theories and dynamic models related to organizational systems—the life's work of an unusually creative engineer⁴ unabashedly treading in the domain of the social sciences. The models describe ways that well-intended policies cause or exacerbate common organizational problems. In contrast to Schein, structure is more important than process.

Forrester's goal in understanding systems was to improve them; "[system] dynamics should provide a basis for the design of more effective industrial and economic systems" (1961, p. 13). He has even modeled urban systems and was an early critic predicting unintended negative consequences of low-cost housing projects and other policy initiatives (Forrester, 1971). The gist of his advice is, in layman's terms, do not attack symptoms but instead identify and work with underlying causes. What makes this simple advice less simple to heed lies in the fact that symptoms and their causes are typically separated in both time and space. As a result, managers make decisions without appreciation of the full range of consequences. By identifying specific dynamic traps that organizations face and by building sophisticated computer models to simulate their behavior, Forrester set the stage for an expertise-model for intervention, requiring diagnosis by an expert who then recommends new managerial policies to those with power to change them.

Concerned that interventions involving "outside experts" fail to generate sufficient commitment to recommended organization changes, Senge has sought to increase the participation of managers in diagnosing their own system. He emphasizes the role of learning, and of building learning organizations, as the central purpose of his work (Senge, 1990a). To Senge, the technical models in system dynamics are of secondary importance to the phenomenon they document—of individuals' misdiagnosing causality in their environments. For example, in one system dynamics simulation, participants learn that their own decision rules caused the costly inventory fluctuations that they earlier attributed to external events such as customer orders or other participants' mistakes. Senge argues that these apparently technical issues are problematic—that is, not easily remedied by technical solutions such as computerized ordering systems—because of this tendency for individuals to attribute causality to factors outside themselves. Once

⁴Forrester invented and holds the patent for random-access, coincident-current magnetic storage, the basic core memory system of the modern computer (Keough & Doman, 1992).

they blame customers, suppliers, or recessions, they fail to discover their own causal role in contributing to problems.

Senge's approach to intervention research thus involves a small team of researchers and company managers jointly diagnosing the dynamics of the organization. Each project starts with a clinic, during which the team reflects on preliminary interview data. Its purpose is to establish norms of openness, productive confrontation on sensitive issues, and joint inquiry, as well as to rid company participants of a "quick fix" mentality and to embrace the open-ended spirit of research. Eventually, computerized management simulations, or "learning laboratories," may be implemented on site to teach others about dynamic structures and policies that diminish the organization's effectiveness. These allow participants to experiment with making decisions with the whole system in mind (Senge, 1990a, b). Senge has called these simulations "management practice fields" as they allow managers to learn from trial and error without being hampered by the real-life consequences of decisions.

Company projects at the MIT learning center fall into one of several content areas, such as "product development" or "service quality." In each category, system dynamics "archetypes" (Senge, 1990b) describe common policy errors that reduce organizational effectiveness; these models serve as diagnostic starting points for new projects. Office Co. is placed by Senge in the *service quality* category. Thus one outcome of the project would be for participants to see that Office Co. is stuck in a self-defeating pattern that prevents them from shifting to a solution focus. Briefly, the common managerial tendency to focus on "hard numbers" fosters systematic underinvestment in service capacity, because the latter variable is measured by the "fuzzy standards" that characterize personnel know-how and service quality. Moreover, inadequate service capacity leads to customer dissatisfaction after a delay—making it difficult for decision makers to connect cause and effect. Figure 2 depicts these relationships, illustrating the hypothesis formed after the author's preliminary interviews with members of the executive team and before any further intervention.

In Senge's model, helping people see how their own thinking contributes to organizational ineffectiveness is integral to creating learning organizations. Organizational members' participation in diagnosing their system is thus essential; however, beyond this, his theory of intervention is less developed than those of Schein and Argyris. He relies heavily on the intuition of the researcher, as revealed in his description of a management group "gelling" in the process of working together.

Now, what do I mean "gelling?" I don't know, but you get to a certain part in the program, and—I've done this for so many years, I just know it—you get to a certain point and you know it can't fail . . . no matter what happens . . . there's sort of a

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container that has been developed, that's jointly generated—so that you know that anything that comes up will serve the growth and learning of that group. . . ." (quoted in Leichenstein, 1992)

Similarly, he maintains that the clinic is a critical first step of an intervention research project, but has not specified conditions increasing group effectiveness or intervention success. Perhaps understandably given the state of the art, part of this success is left to magic. In Senge's words, "there's

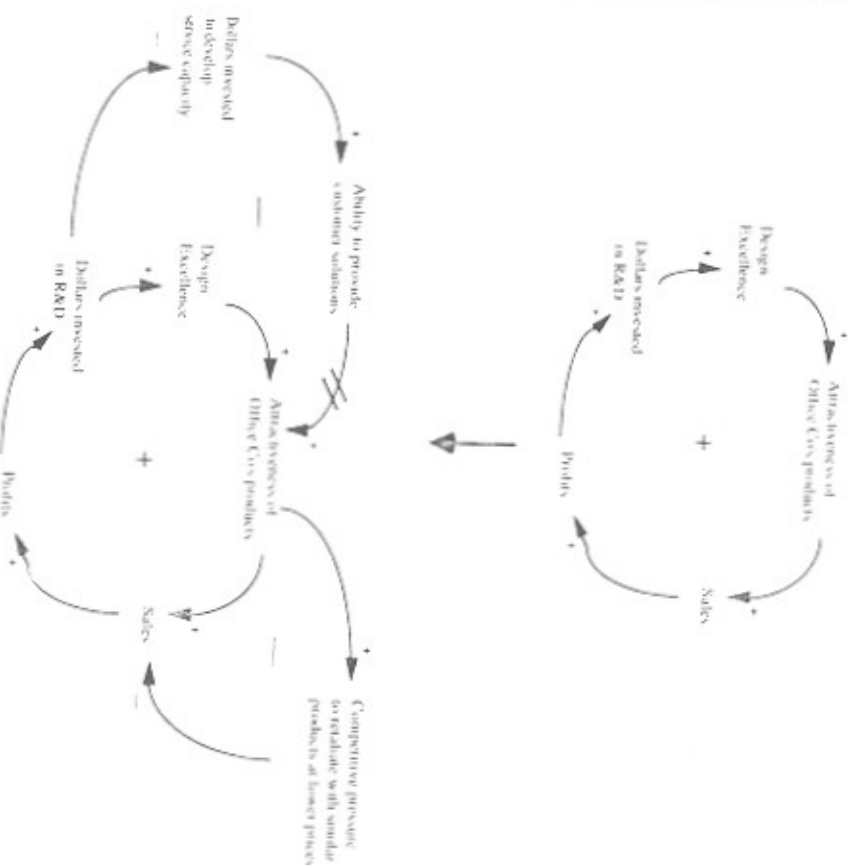


Fig. 2. Senge's service capacity model applied to Office Co. Arrows indicate positive or negative causal relationships, depending on the sign (+/-). Two slash marks through an arrow indicate a time delay. The top diagram illustrates the initial *positive feedback loop* (with a plus sign in the center) that fueled Office Co.'s growth. In the bottom diagram, two *balancing loops* (with minus signs) erode the virtuous cycle of growing revenues. The model suggests that the leverage for further growth is to invest in service capacity.

something about coming together and recognizing very deep fundamentals about working together, in the context of a community of action . . ." that makes the process work (Lichtenstein, 1992).

Senge's overriding goal is to synthesize technical and behavioral issues, and his (1990a) bestseller, *The Fifth Discipline* combines technical models with the "softer" concepts of vision and personal growth. Shared visions matter, writes Senge, because they "uplift people's aspirations. Work becomes part of pursuing a larger purpose. . . . Visions are exhilarating. They create the spark, the excitement that lifts an organization out of the mundane" (Senge, 1990a, pp. 207–208). In the context of system dynamics' history of focusing on technical issues, the behavioral theories underlying Senge's work are comparatively less developed, but reflect an awareness of the importance of both cognitive and affective issues. Driven by a commitment to team learning and shared vision, his aim is to involve people throughout the organization or department in question, despite the fact that—as Forrester emphasizes—the system dilemmas uncovered relate to policy issues addressed primarily by top management. Finally, Senge (1990a, p. 237) proposes that the support of a team is needed to deal with the "central threatening message" of systems thinking, that "our actions create our reality."

A theoretical concern in his intervention process is the gap between those who have the power to change the high-level policy issues that system dynamics models address, and those lower in the organization participating in learning laboratories. It is not clear how participants' appreciation of counterproductive dynamics in company policies can translate productively into action. Also, Senge relies heavily on the intrinsic motivation that stems from personal growth, and pays insufficient attention to whether an organization's culture stimulates learning (Watkins & Marsick, 1993). Finally, a practical concern is that the facilitator-magician may inspire false confidence among company participants, a confidence that is vulnerable to subsequent disappointment as change proves difficult.

INTERVENTION AND INTERPERSONAL COMPETENCE: DEVELOPING SKILLS FOR DOUBLE-LOOP LEARNING

Chris Argyris (1993) is out to improve the state of the world. His technical and sometimes painfully precise language tends to obscure the encompassing relevance of that single-minded purpose. Of the three scholars discussed in this article, he is the most explicit about the logic underlying his intervention research methodology. His argument, in brief, is that all human action is a consequence of design—both conscious and not. In each situation, if then propositions analogous to a computer program specify desired

actions. Ineffective action is as much a result of design as is effective action. Then, why not simply ask people to change their programs, to improve their own effectiveness and the effectiveness of their organizations? The answer to this question is the heart of Argyris' theory.

To begin with, there are two kinds of programs in people's heads; one is the espoused kind, if then propositions we *think* lie behind our actions. The other is the "theory-in-use"—"if then propositions an individual actually uses when he or she acts" (Argyris, 1982, p. 4). The problem is that individuals are unaware of the discrepancy between their *espoused theories* and their *theories-in-use*. This unawareness is partly due to learning our theories-in-use early in life. More insidiously, however, specific features of theories-in-use *keep* people unaware of this discrepancy. Dysfunctional theories-in-use rely on evaluations, abstractions, and inferences that are several logical steps away from "directly observable data" (d.o.d.), but once formulated are treated by actors as facts. We then act upon these "facts," remaining unaware of having made an inferential leap and thus unable to detect our errors.

Most people share what Argyris and Schön (1974) call a "Model I" theory-in-use. Model I is characterized by implicit goals of trying to control the situation, to win, to suppress emotions, and to appear rational. Its strategies involve making untested attributions about others, unshared evaluations, and advocating positions without offering example or illustration. Its consequences include miscommunication and "escalating error." Argyris (1982) defines learning as detection and correction of error, and distinguishes between *single-loop learning* (detecting error without questioning underlying policies) and *double-loop learning* (detecting error without questioning and changing governing conditions. He explains that Model I reasoning processes inhibit the exchange of relevant information, reduce sensitivity to feedback, and make double-loop learning impossible in interpersonal exchanges.

Individuals using Model I will create Organizational I (O-I) learning systems, characterized by "defensiveness, self-fulfilling prophecies, self-fulfilling processes, and escalating error" (Argyris, 1982, p. 8). And, defensive reasoning makes O-I systems resistant to change. Argyris uses an "action map" to illustrate causal relationships between governing conditions, action strategies, and consequences; the map then shows how each variable feeds back to reinforce the others. This web of feedback loops in an organization is self-reinforcing—inhibiting "detection and correction of error," and giving rise to mistrust, defensiveness, and self-fulfilling prophecies. However, the web is itself "caused by the theories of action that human beings use to deal with such problems" (Argyris, 1985, p. 93). In short, the problem is that *individuals* "cause" their social systems to malfunction by virtue of

their theories-in-use—and at the same time *O-I social systems* “cause” individuals to reason and act as they do (Argyris, 1985). This is the intricate logic underlying Argyris’ case for action science, a logic that accounts for the intractability of social systems.

How does Argyris propose conducting research to uncover and change this causal reasoning? To begin with, he argues that there is an alternative to Model I—“Model II,” which lacks the counterproductive features of Model I and facilitates double-loop learning. This is a more radical statement than it first appears. A Model II theory-in-use, in Argyris’s words, is based on “d.o.d.”⁵ minimizes defensiveness, and requires that advocacy be supported by illustration, testing, and inquiry into others’ views (Argyris, 1982; Fig. 3). While it is not difficult to agree with these premises, employing Model II in interpersonal interactions requires profound attentiveness and skill for human beings socialized in a Model I world.

The researcher/consultant must demonstrate this skill while engaging organization members in a diagnostic process that helps them understand how their own actions inhibit learning. The diagnosis constantly draws upon d.o.d., to develop an action map. So that organization members will feel a sense of responsibility for these data, they are asked to contribute “cases,” which reveal their own strategies in working through a tough problem (Argyris, 1985). Through analyzing these cases together, they discover the discrepancy between their actual and espoused interpersonal strategies.

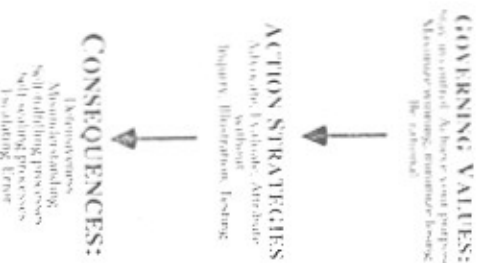


Fig. 3a. Argyris's model I.

GOVERNING VALUES:
Valid information informed choice
Vigilant reasoning; or implementation to detect and correct errors.



Fig. 3b. Argyris's model II.

In summary, an organization's actors are personally causally responsible for reducing their own sense of personal causal responsibility (Argyris, 1988). This means that individuals' causal reasoning about interpersonal interaction is the only leverage point for producing organization change—as it is the reasoning processes of individuals that give rise to dysfunctional systems, which in turn reinforce the same reasoning processes. Argyris (1993) defines “actionable knowledge” as specifying both the skills required to produce a new state as well as the contextual conditions necessary to help maintain it, and maintains that if organizational researchers wish to produce actionable knowledge, they must focus on theories-in-use. If a researcher subscribes to his theory, then the approaches of Schein and Senge must be viewed as not working with “actionable knowledge,” and viewed as unlikely to produce real change, because they do not work with theories-in-use. If, however, a researcher is not convinced by the logical coherence of Argyris’ argument, then the arduous process of re-educating managers to reason and interact in a Model II manner is not likely to seem an attractive alternative.

Argyris is widely cited as a pioneer in organizational change efforts (e.g., Perrow, 1986; Renz, 1988; Kilmann & Covin, 1988) and credited with a lifetime of sustained creative thinking about intervention in complex systems (Walton, 1985). There is evidence that he is not always well-understood; organizational scholars have criticized Argyris for being too logical and cognitive at the expense of motivation and emotion (e.g., Driver, 1985), as well as for being too focused on emotions and self-actualization (e.g., Perrow, 1986). He is seen as paying insufficient attention to the complexity

⁵Directly observable data.

of interacting organization systems (Blake & Mouton, 1988) and as shedding light on organizational complexity through his action maps (Driver, 1985). There is little disagreement however that his attention has been consistently on intervention designed to produce learning in organizations.

The practical gap in Argyris' approach is the extraordinary skill required to successfully implement such an intervention. He has admitted to a developmental period of several (to many) years before a researcher can be set loose capably. Second, Argyris the logician intimidates, with his on-line systematic thinking. Organization members are, at first, likely to be relieved to be placed in his skillful hands and then eventually to feel a sense of hopelessness at their own slow progress toward Model II. Finally, his theory under specifies how Model II theories-in-use translate into the collective learning that leads to the development of new organizational strategies.

REFLECTING ON OPTIONS FOR COLLABORATION

The theories and strategies of Schein, Senge, and Argyris are summarized in Table 1. Reviewing the differences shown in the table we may consider options for collaboration, such as whether three approaches are mutually exclusive, or sequential, building upon each other in a logical sequence, or simply complementary and parallel, describing different but equally important facets of an organization. As discussed above, each intervention theory stems from a theory of organizational ineffectiveness; therefore, a next step is to ask whether these implicit theories are compatible—as well as how tenaciously and narrowly each scholar's theory requires him to adhere to his own approach. To begin with, where did these differences come from?

The Process Shapes the Product

The three theories of intervention emerge out of different research methodologies, which with some liberty shall be referred to as ethnographic, experimental, and intervention. These research traditions range from least to most intrusive, and, by specifying the kind of data collected and the kind of tools utilized, they partly shape the theories. How does this work? The ethnographer observes and sometimes asks questions; his method requires minimal disruption of the system being studied, and he is interested in learning whatever the system has to teach him. Not surprisingly, the ethnographer concludes that unobtrusive assumptions of an organization's culture act as powerful barriers to learning and change (Schein, 1988, 1990). The experimentalist, on the other hand, has a model

Table 1. Differences Between the Three Approaches Summarized

	Schein: corporate culture	Senge: system dynamics	Argyris: theory of action
Primary source of ineffectiveness in organizations	Shared tacit assumptions embedded in the culture	Counterproductive structures in the system, of which actors are unaware	Tacit theories-in-use employed in interpersonal interaction
Kinds of data gathered	Visible symbols that reveal culture, together with members' explanations of these	Relationships between different parts of the system identified by participants and researchers	Brief scripts of difficult interactions written by participants, which reveal implicit strategies for action
Diagnostic output	Description a set of shared, underlying assumptions which may be internally contradictory, or impediments to achieving organization goals	Model: a dynamic causal loop diagram of the system in which participants work, and a shared understanding of how its structure produces undesirable outcomes	Model: a causal map of how strategies used by individuals create unintended consequences, and feed back to be self-reinforcing
Next steps	After participatory diagnosis, elicit participants' help in challenging problematic assumptions	Find leverage points in system and attempt to change structure to reduce system irrationality	Teach participants new theories for action to increase their effectiveness in interactions
Research tradition	Ethnographic and clinical	Experimental, and cybernetic, engineering	Intervention
Intervention strategy	Observe, intervene little or not at all, build confidence in your clinical insights, eventually act as a consultant, trying to help	Engage a team of managers and researchers to jointly gather data and build insight	Be open and explicit about research intentions, confront and test all attributions and developing hypotheses, reveal the logic behind each move
Temperament	Clintonian	Magician	Logician
Core challenge or gap	Careful diagnoses are anchored in status quo, may not facilitate ability to change organization	Gap between participants who diagnose leverage points and their decision-making authority	Difficulty of changing deeply-held implicit theories and lack of process for diagnosing organization-specific culture and structure.

in mind of how the system he studies will behave; his goal is to test a hypothesis and he will intervene as necessary to gather the relevant data. The experimentalist concludes that managers' lack of understanding of causality as depicted in his model leads to ineffective decisions (Sierman, 1989; Senge, 1990b). Finally, the interventionist learns from intervening in the system; he believes, like Lewin (1951), that to understand a complex system you *must* try to change it. He explains that normal science manipulates covertly and, then, its conclusions tend to specify conditions that must be kept secret to work (Argyris, 1993). In contrast, he is dedicated to revealing his reasoning and asks his subjects to do the same. Thus, the interventionist concludes that only by inquiring into tacit interpersonal strategies can social systems be changed to promote significant learning. In summary, each methodology shapes the nature of the findings obtained.

Similarly, the process of recruiting and training scholars shapes the way that organizational research advances. Several structural forces reinforce the separateness of academic theories. First, new researchers are mentored by scholars who introduce them to their own methods and paradigms. Second, norms for reporting findings encourage showing how one's theory supplants rather than integrates with previous work. Finally, the temperaments and tacit assumptions of individual pioneering scholars may also contribute to the separateness of different traditions.

Temperamental Factors that Inhibit Collaboration

If some playfulness is tolerated by the reader, we can create characters to symbolize these three approaches to intervention. They are the clinician, the logician, and the scholar, respectively. Although these labels oversimplify their theories and the scholars behind them, they point toward important temperamental differences. For example, the logician has little tolerance for the magician's fuzzy insights, for his use of intuition and his lack of concrete evidence in reaching conclusions about a group's psychology. Similarly, the logician cannot accept the clinician's early need for secrecy, his insistence that he must not reveal his own reasoning, nor can the logician in good conscience agree that organization-specific cultural beliefs could possibly have an important enough effect to outweigh the dominant effect of society-wide defensive causal reasoning. Meanwhile, the magician's temperament shies away from the crisp, linear thinking of the logician, and he lacks enthusiasm and patience for the painstaking observation practiced by the clinician. Finally, the clinician sees the logician as unfriendly and disruptive of the rich social fabric in an organization. He sees the magician as sloppy clinically, although he feels welcomed by his sense of community and fascinated by his elegant technical models. In

short, the scholars themselves tend to focus on those features of the theories which promote incompatibility.

Theoretical Factors that Inhibit Collaboration

Argyris distinguishes between "technical theories of action" and "human theories of action" and maintains that "a comprehensive actionable theory of management and organizational behavior will contain both" (Argyris, 1993, introduction). He advocates combining technical theories such as those from system dynamics with action science to improve implementation, by addressing the defensiveness that may arise due to proposed technical changes. Argyris's theory requires him to lack confidence in the interventions of Senge and Schein. In his terms, their approaches can describe and analyze gaps, but as strategies for change they will not work because they do not deal with the defensive causal reasoning that keeps everything locked in place. Individuals will remain unable to transcend counterproductive interactions without changing their own theories-in-use. He proposes that Model II training could be used to enhance learning about system archetypes or about tacit cultural assumptions, but that neither of these disciplines by themselves will lead to significant change.

Similarly, in the view of system dynamicists, the technical discipline of understanding how the parts of a complex organizational system interact is the most important determinant of effectiveness. From the view of the whole system, no amount of increased interpersonal competence can override the effects of irrational decisions that exacerbate existing organizational problems in attempts to solve them. Finally, Schein's theory of intervention states that the kind of confrontation action science employs in developing Model II skills will limit the chances of generating commitment and learning.

Given these conflicts, if the underlying theories of effectiveness behind each intervention are taken literally then the three approaches must be viewed as mutually exclusive. Specifically, Schein and Argyris are directly in opposition on several points. Schein's intervention theory requires him to draw private inferences and to avoid confrontation. Argyris' theory requires him to illustrate and test all emergent inferences and evaluations. Schein believes the development of process skills will facilitate organizational learning; Argyris believes that such skills are surface details that by their nature are unable to change the underlying anti-learning strategies and behaviors. Meanwhile, Senge, who with his technical discipline offers the most straightforward potential for collaboration with either Schein or Argyris, has instead created his own approach to intervention research, which adheres neither to process consultation nor to action science.

If the premises described above—in particular for action science—are relaxed, each theory can allow for a certain amount of collaboration with other approaches, as long as its own main premise remains central and dominant. Both theory and temperament, however, pose barriers to the principal scholars themselves developing an integrated theory of organizational learning. Thus, like Fritz Perls' patient, companies participating in the MIT learning center may tend to select one approach over the other two, as the three principal scholars themselves may not easily forge a new integrative approach. By both chance and by choice, learning center researchers are also likely to favor utilizing one of the approaches. However, in spite of the above barriers, there are theory-based reasons to experiment with integrative approaches.

Similarities Underlying the Three Approaches

Some striking similarities among the three theorists support the notion that integration may be possible and useful. All three believe *taken-for-granted* cognitions of organizational actors lead to unintended, counterproductive effects. Furthermore in each case these taken-for-granted elements—whether tacit assumptions, erroneous causal models, or theories-in-use—contain features that block actors' own awareness of their counterproductive nature. Schein describes how shared assumptions embedded in an organization's culture are so taken for granted that organization members themselves are not aware of them. Senge explains that once causality is misattributed (inevitable in complex dynamic systems) decision makers stop seeking the cause for a given outcome; mental models, once formulated, endure, and actors remain unaware that these observed relationships are hypotheses rather than facts. Similarly, Argyris describes Model I theories-in-use as learned so early that individuals are unaware of them; effortless skill in using these interpersonal strategies also contributes to unawareness. For example, we perceive others as defensive and fail to be aware of our own role in contributing to this outcome.

Considered in context of a broad range of organizational development techniques, their intervention strategies are similar in important ways. All three propose that tacit sources of ineffectiveness must be made explicit in order to be changed. All three therefore employ a cognitive level of intervention. And, finally, all three maintain that these blindspots are unlikely to correct themselves without an outside interventionist. Schein suggests a skilled researcher or process consultant can help uncover basic assumptions. Senge advocates using researchers to facilitate diagnosing non-obvious causal relationships in the system, and Argyris maintains that organization members can learn Model II skills through working closely with an interventionist.

Sacrificing Purity for Utility

In light of these commonalities, an integrative model is sensible.⁶ The core challenges or gaps identified for each scholar provide a starting point (refer to Table I), as the clinician, the magician, and the logician each may contribute to filling gaps in the others' approaches. Schein's careful diagnoses lack a strategy for changing the tacit assumptions identified, and thus do not facilitate action. He needs both a technology for cognitive change and help designing new organization policies. Senge's system archetypes provide insights for policy; however, he does not address participants' lack of decision-making authority to act on these diagnoses and risks fostering frustration; his approach also lacks a technology to teach the skills to communicate new insights to others without engendering defensiveness. Argyris' model lacks a systematic way to help a new interventionist discern organization-specific patterns, and assumes instead a level of skillfulness that enables facile diagnosis without a process or template. These core challenges can be addressed partially by features of others' theories, as summarized in Table II. Schein offers an approach to diagnosing organization-specific cultural beliefs, enabling a researcher to gain insight about clients systematically. Argyris provides a process for learning to change counterproductive interpersonal dynamics common to all organizational settings. Senge offers insight into the dynamic cause-effect relationships that shape strategic decisions. Thus, in response to the second question posed at the beginning of this article, an integrative model could be developed to be more helpful than any of the three approaches applied separately.

An Illustration

Could Office Co. benefit from this integration? One possibility is to start with the least intrusive intervention, and facilitate a session to help executives identify cultural barriers to implementation of their new organizational goals. In such a session, they might discover that their strong corporate culture, with its espoused value of employee participation, conflicts with deeply-held beliefs that the organization's charismatic leaders have always provided the right answers. Similarly, as data gathered in early interviews suggest, a tacit belief in the inherent attractiveness of good design may prevent them from taking seriously providing customer solutions. These insights point to subtle barriers to effective action; however without simultaneously developing the interpersonal skill to converse productively

⁶This section is based on work the author has done in collaboration with Professor Bertrand Moinigon at HEC. Much of the remainder of this paper is based on our conversations about Argyris, Senge, and Schein.

Table II. Similarities and Complementarities of the Three Approaches

	Schein: corporate culture	Senge: system dynamics	Argyris: theory of action
Source of ineffectiveness revealed	Taken for granted shared basic assumptions	Taken for granted cause-effect relationships	Taken for granted interpersonal strategies
Level of intervention	Cognitive: expose and change shared tacit assumptions	Cognitive: discover blindness to delays and unawareness of causal relationships within complex dynamic system	Cognitive: expose defensive theories-in-use and help participants learn new theories-in-use
Needs from others	Technology for changing carefully-diagnosed cultural patterns, and help designing new strategic directions	Behavioral skill for implementing change and understanding of cultural barriers to new strategies	A way to analyze culture-specific patterns in organizations, and help designing new strategic directions
Offers to other interventionist/researchers	A systematic way to diagnose specific cultural patterns of each organization	A dynamic diagnostic model of the organization that highlights leverage points for strategic change	A process for learning to change counterproductive interpersonal dynamics common to all organizational settings

about issues, they are difficult to utilize for productive change (Argyris, 1993). Similarly, taking action as a result of exposure to the system dynamics model illustrating how companies systematically under-invest in service capacity and erode customer satisfaction is difficult to do without addressing organizational defensive routines. And at the same time, few managers are willing to commit the time away from their jobs to learning Model II skills. Thus, a partial solution to this gap is to help them learn these skills "on-line," while carrying out the substantive work of developing a new strategy (Martin, 1993). The interdependence of these interventions suggests that engaging in them simultaneously may prove important to the ability to design and implement organizational change. Figure 4 illustrates this proposition.

CONCLUSION

In conclusion, the persistence of separate disciplines is easy to understand: it has been reinforced by intellectual, structural, and emotional



Fig. 4. An integrative approach.

factors. However, in addressing the question of whether the underlying theories of these scholars face insurmountable substantive conflicts, this article concludes that they are not. Schein's commitment to careful clinical work and to respecting the uniqueness of each organization's culture adds richness to the work of both Senge and Argyris. Senge's system dynamics models provide valuable strategic insights that neither of the other two behavioral theories contain. Finally, Argyris compels us to address the fundamental sources of ineffectiveness found in interpersonal conversation, and builds a convincing case that there is no way to avoid some of this long hard work in pursuing organizational learning. Future intervention research using the three approaches together would contribute greatly to increasing our understanding of barriers to learning and change in organizations.

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